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ABSTRACT

A study was done of the effects of cooperative learning and conflict resolution on the student perception of the social climate at three campuses of an alternative high school in New York City. The study looked at the effect on one campus that received 2 years of conflict resolution training, another campus that received 2 years of cooperative learning training, and another campus that received 1 year of conflict resolution training followed by 1 year of training in both conflict resolution and cooperative learning. The data for the study came from a main student survey that was administered initially in June of 1988 to 350 students across three campuses and readministered at several points to new students. In May of 1989, January of 1990, and May of 1990, 345 students who had previously answered the pre-survey completed a similar post-survey. Analysis of the results found some of the following: (1) positive changes over time in discipline and clarity and fairness of policy; (2) students experienced more promotive interdependence over time but less liking for school and learning; and (3) generally positive changes with some differences between campuses. Included are 18 tables, 1 graph, 2 appendixes (containing 11 tables of data from a principal components analysis of climate measures and derivation of scale scores), and 28 references. (JB)

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Effects of Cooperative Learning and Conflict Resolution on Student-Perceived Social Climate at an Alternative High School

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Abstract

Three campuses of an alternative high school in New York City received either two years of conflict resolution training (Campus A), two years of cooperative learning training (Campus C) or one year of conflict resolution training followed by one year of training in both conflict resolution and cooperative learning (Campus B). It was predicted, based on prior theorizing and research, that through teaching collaborative social skills and constructive approaches to the resolution of conflict, and creating promotively interdependent experiences, the interventions would have a positive impact on a wide variety of aspects of student-perceived social climate, as captured in survey responses. Despite serious obstacles to obtaining significant results, such as difficulties in implementation of training, curtailment of funds limiting the project to two years rather than the initially planned three, and the pre-existence of a climate already demonstrably more positive than in the City's traditional high schools, the interventions did have numerous positive effects on social climate.

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Effects of Cooperative Learning and Conflict Resolution on Student-Perceived Social Climate at Alternative High School

As programs of cooperative learning and/or constructive conflict resolution become fully integrated into schools, basic attitudes and norms of behavior should begin to change. In both cases, through collaborative classroom experiences, and through the experience of conflicts creatively and collaboratively approached, students should begin to regard one another as colleagues rather than rivals.

It has been theorized and demonstrated that there are a host of effects associated with cooperative as opposed to competitive relations, including: greater trust, friendliness, helping, sensitivity to similarities as opposed to differences, peer support and acceptance, perspective-taking, and more positive evaluation of past interactions and more positive expectations of future interactions (Deutsch 1949, 1973, 1985, 1992a; Johnson & Johnson, 1983, 1989). If, as the result of cooperative learning and constructive conflict resolution interventions, students on a school-wide basis find themselves more and more in cooperative as opposed to competitive relations with one another, the attendant effects should also come to be felt on a school-wide basis. Such a change would amount to a change in the general social environment, or "social climate," of the school. There is research to support the notion that cooperative learning and conflict resolution can have a positive impact on social climate in schools, the support for the former being somewhat stronger.

Johnson and Johnson (1989) report a meta-analysis of research studies exploring the effects of cooperative learning on social support, one essential aspect of social climate. Their results indicate that cooperative learning tends to increase the sense of social support. Solomon, Watson, Battistich, Schaps, and Delucchi (1990, 1991) incorporated cooperative learning as a key component of their ambitious "Child Development Project." In this case, there were several other intervention components also aimed at the socio-moral development of the

students. The fact, then, that Solomon et al. were able to demonstrate significant differences between program and control schools in such social climate dimensions as "sense of community" and "social connectedness" is not exclusively traceable to cooperative learning. It is, however, in combination with the evidence cited by Johnson & Johnson, quite suggestive.

Lam (1989) summarizes 14 studies of conflict resolution programs in schools, and concludes that while it is generally believed in the field that such programs have a positive impact on social climate, this belief is not well documented. Of the 14 studies she summarizes, only four report assessment of effects (all positive) on social climate. Van Slyck and Stern (in press) found that peer mediation training had a positive impact on assessments of school climate by those selected and trained as mediators. Such impact was not apparent for the student body as a whole, however, although qualitative data indicated a perception by faculty of a reduction in violence.

Finally, in the current project, Zhang (1992) has demonstrated the crucial role that the individual's experience of social support and victimization play as mediators of the impact of cooperative learning and conflict resolution interventions on that individual's psychological states and academic achievement. This underscores the importance of assessing the degree to which our interventions succeeded in affecting social climate on the school-wide level.

While the research described above does indicate that some aspects of a school's social climate can be affected by cooperative learning, and probably by conflict resolution interventions as well, none of it goes to the lengths of verifying the sweeping effects on social climate that would be expected from theory, as discussed above.

The study reported in this paper was undertaken with the aim of investigating the impact of cooperative learning and conflict resolution interventions on a broad

spectrum of dimensions of social climate. The existing theory and research reviewed above suggests that such an impact should be both obtainable with high quality interventions, and of vital importance in mediating the effect of such interventions on students' lives. This aim was adopted in spite of serious obstacles discussed below under Description of the Interventions.

Conceptualizing and Measuring Social Climate

This study is concerned with changes in the social climate at AHS over the course of the conflict resolution (CR) and cooperative learning (CL) interventions. Several of the constructs which will be considered here are closely akin to those in the literature on organizational climate, which is generally concerned with the workplace. While the difference in venue does introduce some different issues, this study is still subject to several of the theoretical and empirical issues involved in the organizational climate literature.

In a study of the effects of organizational climate on teachers' experience of work stress, Michela and Lukaszewksi (1986) proposed that "the concept of organizational climate is concerned with workers' perceptions and experiences of psychologically potent features of the workplace, such as . . . autonomy, pride in their work, good working relations with other workers, and so forth" (p. 4). The present study is concerned with students' perceptions and experiences of psychologically potent features of their school environment.

The quantitative measures of climate employed in our project were all subjective reports of perceptions of climate by students and teachers. It should be noted that there has been considerable controversy over whether the use of perceptual measures to capture climate, which many consider to be an objective construct, is appropriate (see, e.g., James & Jones, 1974; Jones & James, 1979; Schneider, 1975). The case made for the use of perceptual measures, however, is

convincing (James & Sells, 1981; Michela & Lukaszewski, 1986; Schneider, 1975). Climate, these authors hold, is primarily a matter of the individual's perceptions and cognitive representations of situations and events. In an attempt to address the subjective-objective question, it has been proposed that "if perceptual measurement is to be used, variance in scores must be shown to be related to differences in situations rather than to differences in individuals" (James & Jones, 1974, p. 1108). The present study includes an attempt to meet this criterion.

Another closely related issue in the organizational climate literature has to do with whether what is being assessed is an attribute of the organization or of the individual (Glick, 1985; James & Jones, 1974; Michela & Lukaszewski, 1986). James and Jones proposed differentiating between "organizational climate" on the one hand and "psychological climate" on the other. Michela and Lukaszewski followed Glick in differentiating between "the individual's own experience of the workplace [and] perceptions of the organization as a whole" (Michela & Lukaszewski, p. 5). The present study is primarily concerned with two sets of factors, one of which corresponds to organizational climate, or perceptions of the organization as a whole, and the other of which corresponds to psychological climate, or the individual's own experience in the organization. We have termed the former "External" factors and the latter "Internal" factors.

Description of Alternative High School

Our interventions took place at a school we have given the pseudonym "Alternative High School" (AHS). AHS is an alternative high school in New York City under the Board of Education. It consists of four campuses around the city, with a central administration located at the site of one of the Manhattan campuses. Three of the four campuses participated in our study, and are referred to throughout the studies of the project as Campus A, Campus B, and Campus C. The fourth

campus declined to participate because they were experiencing a great deal of administrative turmoil.

AHS is an unusual school, serving a population of "at risk" students, and dedicated to a philosophy of student and teacher empowerment. For the 1988-89 academic year, the year our interventions began, the student population at AHS was 56.9% African American, 40.5% Hispanic, 2.2% white, 0.4% Asian, and 0.1% Native American. About one third of female students were "teen parents," and many of the students came from families which were economically disadvantaged and/or had "high risk" factors such as drug abuse or homelessness. AHS students had achievement records well below that of other New York City high schools and the minimum standards set by the Office of the Chancellor of the New York City Public Schools (Mitchell, 1992a).

Many of the students who apply to AHS have already dropped out of other high schools or are at risk of doing so. Others are referred by high school guidance counselors or the courts (Mitchell, 1992). Only about 40% of students who enroll at AHS graduate, while 30% drop out, 15% transfer, and about 12% are truant or unaccounted for. Less than 60% of the students attend class regularly (Deutsch, 1992b).

In her discussion of AHS, Mitchell (1992a)[1] describes AHS's philosophy and its actualization as follows:

> The main tenets of the school's philosophy are school-based management, shared decision-making, teacher empowerment, and student empowerment. The fact that most of the students have dropped out of another school requires the mission of this school to become a broader one to include increasing self-esteem, lessening the "at risk" status of its target population,

[1]Those interested in a more detailed description of AHS are invited to see Mitchell's excellent, in-depth discussion of the school in its entirety.

and developing intellectual potential. The shared operating assumption of the faculty is that students will learn best when they are in a calm, informal environment in which they are respected and are actively engaged in their education. The staff works within a holistic framework that encourages students to question and assess their knowledge and experiences.

This philosophy is observable in several dimensions -- in the way students and teachers participate together in governing the school, in the use of first names between students and teachers, and in the role of teachers as participants in policy making. The empowerment model can be seen in the curriculum and instructional practices of the school. The goals in these areas include developing skills, perceptions, literacy, cultural literacy, and a sense of history. There are courses with names that demonstrate their social relevance for this population of students. Examples are Harlem Renaissance, Twentieth Century in Crisis, and Immigration. Included in classroom discussions are such controversial issues as racism and oppression as well as more common concepts in social education such as civics and democratic ideology. This curriculum is an attempt to relate the students' schooling experiences to the historical and social issues relevant to their lives. It is empowering because it makes them more resourceful in dealing with people and situations.

The more affective side of the mission at Alternative High School includes the notion of instilling in this population of students, who for whatever reasons have not made it in more traditional high schools, a sense of self worth which must work in conjunction with empowerment. The staff tries to make AHS a place that will help these young people change some of the wretched social realities that plague urban areas and the lives of the poor. The transformation of these realities in such a complex social

> environment as the one in which these students live requires special skills and sensitivities. This, we believe, is part of the reason AHS was receptive to training in cooperative learning and conflict resolution. (Pp. IV. 1-IV. 2).

The goals of teacher empowerment, shared decision-making and site based management are largely expressed through weekly faculty meetings at each site. At these meetings, issues of school policy, curriculum, and discipline are discussed and acted upon by the teachers, staff, and campus coordinator. Campus wide activities and educational themes are planned, and students in particular difficulty are discussed.

Students empowerment is enacted through CORE, a group of student representatives (chosen in different ways at the different campuses) who function as something of a student government. CORE votes on some issues of school policy, plans student activities, has input into student admissions, and holds hearings on violations of school policy and can discipline students when provided for by school policy.

Students also have extensive opportunities for vocational experience and education. AHS incorporates an internship program through which students hold paid jobs and receive supervision and counseling at AHS as well as school credit. There are also a sequence of occupational education courses available, some of which are explicitly linked to the internship program.

An unusual amount of social and emotional support is provided through what are called "Family Groups" at some campuses and "Strats" (for life strategy) at others. These are small groups which students stay with for their entire tenure at AHS, and which incorporate the basic "homeroom" functions such as daily attendance and dissemination of information as well as some group counseling and occasional educational projects.

In summary, then, AHS is an ambitious school, dedicated to serving some of the most "at risk" high school students in New York City, and at the same time dedicated to providing these students with extraordinary support and a unique opportunity for learning and personal growth.

Description of the Interventions

As noted three of the four campuses of AHS agreed to participate in our study: Campus A to receive two years of conflict resolution training, Campus C to receive two years of cooperative learning training, and Campus B to receive one year of conflict resolution followed by one year of both cooperative learning and conflict resolution. We had hoped to include the fourth campus of AHS as an untrained, quasi-control, comparison site. Unfortunately, as indicated above, that campus declined because they felt they were in too great a state of administrative turmoil to take on the project.

Because a high degree of teacher commitment was necessary for our interventions to be successful, we informed AHS that we would only work in a site where the majority of the teachers indicated their willingness both to participate in our training and to cooperate with our research efforts. We were told by the principal that a majority of the teachers had so agreed (Deutsch, 1992b).

Training began in the summer of 1988. Three days of training in conflict resolution, and two days of training in cooperative learning were offered. Staff from each campus attended the relevant workshops: conflict resolution for Campus A, cooperative learning for Campus C, and both for Campus B. Virtually all teachers, administrators, and paraprofessionals were able to be present (Deutsch, 1992b).

From that point on, the training proceeded separately at the three sites (Mitchell, 1992b).[2] At Campus A, our trainer, Karen (a pseudonym) and our training director spent one day per week at the school, and launched a series of conflict resolution workshops for the teachers (a total of 14 two hour workshops over the first academic year) with Karen also working extensively in the classrooms training the students directly. In year two, Karen was the sole trainer at Campus A, working primarily with students. She "conducted approximately 145 classroom lessons and innumerable individual staff development sessions from October, 1989, to June, 1990. In addition, from March to June, 1990, she held 16 workshops to train 11 student mediators" (Mitchell, p. V. 6). In addition, Karen was called on to counsel students and to mediate disputes between students and between students and faculty.

At Campus B, Karen and the training director (and later the trainer from Campus C, Sarah--a pseudonym) conducted two-hour, after-school conflict resolution workshops every other week. However, they encountered some resistance, and after nine workshops, in February, 1989, training was suspended. The difficulties were ironed out over the course of the spring, and in September, a new trainer, Beth (a pseudonym) began working with the faculty in both cooperative learning and conflict resolution, following a training model emphasizing a "mutual learning process" (Mitchell, 1992b).

At Campus C, we encountered the most serious obstacles to our training. First, the New York City Teachers Union insisted that we use their trainer. Later, that trainer decided she could not handle the project because of a long commute to Campus C. Finally, in January, 1989, our trainer, Sarah, began training there in cooperative learning. Over the course of that spring, three workshops were held,

[2]Those interested in more detailed information on the progress of our interventions are invited to see Mitchell's description of their implementation. For a more detailed discussion of the rationale for the training, please see Deutsch (1992a).

and Sarah worked with the staff in putting together a student Black History Month production, using the work on the project as a vehicle for learning about collaborative work. In year two, numerous problems arose with scheduling workshops so that only 5 were held between October and December. In the spring, a staff development model was adopted, and Sarah was able to hold 15 sessions with faculty members including planning and classroom observation. Unfortunately, Sarah became ill in April, and was unable to continue for the rest of the spring. (Mitchell, 1992b).

After year two, due to curtailment of funding, we were forced to cease our data collection efforts (described below) and cut back on training. Because of requests from AHS, we managed to provide for eight additional days of training at each Campus. Reports from trainers and coordinators indicated that the teachers at Campuses A and B, but not necessarily Campus C, continued to improve their skills throughout the third year. (Mitchell, 1992b).

Questions Addressed in the Study

As I discussed in the first section of this paper, this study was undertaken with the aim of investigating the impact of cooperative learning and conflict resolution interventions on a broad spectrum of dimensions of social climate. This goal was adopted despite several serious obstacles.

One obvious obstacle was that our data covered only the first two years of the intervention. We know that it usually takes three years for teachers to become proficient in cooperative learning (Deutsch, 1992a) and in fact in this case it was not until year 3 (after our data collection effort had been halted by curtailment of funds) that the teachers at AHS began to feel skilled and at ease in employing the skills we had trained them in (Deutsch, 1992b).

A second key obstacle was the difficulty we experienced in implementing the training at Campuses B and C (Mitchell, 1992b). This added to the normal delay discussed above. Finally, AHS aims (and we believed they had largely succeeded in this aim) to create a much more supportive, empowering environment with less destructive conflict than in traditional schools (Mitchell, 1992b). While this vision is in harmony with the goals of our project, and helped pave the way for its acceptance at AHS, it presents a problem for assessing the effects of our interventions on climate. The question is, how much room was realistically left for improvement of the climate in directions in which AHS had already made great strides?

These three obstacles combined to create a unique challenge to demonstrating the effects of our interventions on climate. The areas in which we wished to have an effect were believed to already be improved well beyond the norm for New York City high schools, and we knew that the project had not been allowed to run as long as it should in order to experience its full effects.

In examining the effects of our interventions on social climate, several possible effects had to be taken into account.

AHS vs. Other Schools

AHS is an unusual school in and of itself. We tested the assumption, discussed in the introduction, that before our interventions began the climate at AHS was seen as more positive in many ways than at the traditional high schools in the city. We also hoped, by comparing AHS to other schools, to demonstrate that our subjective measures met the criterion proposed by James and Jones (1974) of differentiating between situations.

Campus

Three different intervention strategies were to be carried out, and effects at the three campuses would be assessed separately. In some of the analyses by other

investigators on this project (Khattri, 1992; Tepavac; 1992; Zhang, 1992) direct comparisons among the interventions were made. In order to establish baseline similarities and differences, the climates at the three sites before the interventions began were compared.

Time

We hypothesized that, over time, the interventions would have some overall impact on the social climate. When climate is assessed subjectively, such overall effects are generally measured and discussed as changes in the collective perception of the social climate (Schneider & Reichers, 1983).

Individual changes

We also expected that the interventions would operate on the individual level, by affecting the way that students interacted with and perceived their environments. This analysis coincides with the view of climate as an internal, psychological phenomenon, and our expectation was that this analysis would yield its results primarily in our Internal measures. However, considering the possibility that the individual student's evaluation of the climate of the school as a whole might also change over time, the External factors were also examined.

Exposure

Most of the data collected in this project was of the self-report variety. This has created obstacles to interpretation referred to throughout the various chapters of this report. In an effort to move beyond relationships between different perceptions of a student, and at the same time isolate the effects of our intervention from the effects of AHS, climate variables were tested by regression to see if they could successfully be predicted from two independent Exposure measures: a

measure of exposure to conflict resolution training for Campus A and a measure of exposure to cooperative learning at Campuses B and C.

Classroom Ratings by Exposure

The questions above relate to overall experience, and the ways in which the school environment, and the individual student's experience of it, may have changed. The Exposure analysis described above attempts to show how much of these changes are attributable to the interventions.

A more immediate consequence of the interventions should be improvements in the perceived climate in individual classes. Students were asked to make a series of ratings of the one class they attended most often in the month leading up to the survey. Three factors derived from these ratings were tested to see how well they could be predicted from the Exposure measures.

Methods

Research Design

Our total research design was quite broad, including a main Student Survey, several topical supplemental surveys, systematic observation around the school, interviews with students, staff, and administrators, and examination of school documents. The data for the current study came exclusively from the main Student Survey.

This survey was initially given, in June, 1988, to 350 students across the three campuses.[3] This survey would serve as a "baseline" as it was completed before the initiation of our interventions. In September, 1988, 291 entering students, who also had no exposure to our interventions, filled out a similar survey. The difference was

[3]While the total enrollment figure at the time was around 540, only 350 were in attendance at the time of the survey--a pattern which was to repeat itself throughout all of our data collection efforts.

that, for questions involving descriptions of the school (including the climate questions), these students were instructed to answer with respect to their old schools as they had not been in attendance at AHS long enough to render judgements about the latter. In May, 1989, September, 1989, January, 1990, and May, 1990, new students were also given this "pre-" intervention survey. Students who filled out the survey very shortly after arrival at AHS filled out the version describing their old schools, while those we were not able to get to for a couple of months were given the version of the survey describing AHS. The former are referred to as "entering" students while the latter are described as "continuing." Continuing students, although they had been at AHS a brief time, had generally experienced minimal exposure to the interventions, and are treated as pre-surveyed as well.[4] Table 1 presents pre-post status, number of respondents, and school described for each survey.

In May, 1989, January, 1990, and May, 1990, students who had previously answered our pre-survey were asked to complete a similar (on the items of interest for the current study, identical) "post-" survey. In this case, all students answered with respect to AHS. Numbers of respondents for these surveys are also presented in Table 1. Table 2A presents the breakdown of pre-survey dates for all post-surveyed students, and Tables 2B and 2C present separate breakdowns for entering and continuing students. Figure 1 depicts the layout of survey administration.

Variables in the Analysis

Seventeen factors have been used in the present analyses (in addition to the three classroom rating factors).[5] As discussed above, these can be divided into two

[4]While this survey is thus not purely pre-intervention, this fact would only act to weaken pre-post differences and thus poses no threat to the validity of inferences we will draw.

[5]For a detailed presentation of the procedures used to arrive at all factors, see Appendix A.

sets. The first consists of what we have termed External factors. These are factors which represent the student's perception of the environment in general. The second set consists of Internal factors. These factors represent aspects of the perceived climate specific to the experience of the student making the ratings.

As an illustration, consider the factors "victimization exists" and "individual victimization." The first is computed from items asking how often various things occur in the environment in general, such as students bringing weapons to school, students damaging school property, or students (in general) being offended by racial or ethnic put-downs. The second asks how often the student making the ratings has been victimized, for example, by being mugged for jewelry, being physically attacked, or being pressured to have sex.

The third set of factors were derived from the ratings of a particular class. As noted above, students were asked to pick the class they attended most often in the last month,[6] and answer a series of questions with reference to that class.

Tables 3A to 3C present a description of each of the factors used in the analysis grouped into the External, Internal, and Classroom Rating sets.

Analyses: Statistical Methodology and Results

Different types of analyses were appropriate for addressing the various hypotheses under discussion in this chapter. The statistical methods used for each are briefly described below. One general note should be made first, however.

The number of subjects (N) varies for each analysis for two reasons. First, students did not always fill out all the items on the surveys. Some analyses require the presence of answers to many items for a case to be included, while others

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[6]Students who said they attended all their classes equally were asked to pick the class which met more often. If this did not simplify the choice, they were asked to rate any of the more frequently attended classes they wished to.

require answers to only a few. Second, since each of the analyses addresses different comparisons, each involves different subsets of the total sample.

AHS vs. Other Schools

Methodology. For this analysis, ratings of the climate at AHS were taken from the baseline sample of May, 1988. Ratings of other schools were taken from incoming students in September, 1988. Since the latter were new arrivals, with little experience at AHS, on all climate questions they were instructed to answer with reference to their previous schools. Ratings were compared by Multivariate Analysis of Variance (MANOVA) and by univariate t-tests. MANOVA's were performed separately for the External and Internal factor sets. The analysis was carried out at both the AHS-wide level, and at the individual campus level.

Results. As predicted, AHS was rated as having a significantly more positive climate overall than the students' old schools. This expectation was verified in the multivariate test of the External factor set (see Table 4) and in the tests of individual factors. The difference between schools on the Internal factor could not be interpreted because there was an interaction between campus of AHS and school (AHS vs. old school).[7]

As noted above, AHS was significantly more positive in its climate than students' previous schools on several of the individual factors. For the three campuses together, AHS was rated more favorably on "discipline," "criminal activities," "empowerment," "academic support," "group learning," and "victimization

[7]This multivariate interaction was driven by three factors: "individual victimization," "academic image," and "school support." Of these three, only "individual victimization" shows a significant univariate interaction, which is discussed in more detail below. "Academic image," while more positive at all three campuses, was not significantly more positive at Campus B. "School support" was not significantly different at any of the campuses, but was slightly higher at Campuses A and C, and slightly lower at Campus B.

exists" among the External factors, and on "academic image" among the Internal factors.

There were only two exceptions to the perception of AHS as having a better climate. First, the "individual victimization" factor was rated significantly worse at Campus C than at the previous schools of students at Campus C. This factor was rated as significantly better at Campus B than at the previous schools of students at Campus B, while there was no significant difference at Campus A. Second, the "social image" factor was rated significantly worse for all 3 campuses together, and for Campus B, considered alone. See Tables 5 and 6 for a summary of significant univariate tests for AHS as a whole and for individual campuses.

Campus

Methodology. The analysis of campus differences was also performed on the baseline data of May, 1988, before any of the interventions began. Campuses were compared by MANOVA on the External and Internal factor sets, and by univariate Analysis of Variance (ANOVA). Contrasts were performed for significant factors to pinpoint which campuses differed.

Results. The multivariate analyses for differences between campuses did not yield meaningful differences. Univariate differences were found on 2 of the External factors. "Empowerment" was found to be higher at Campus A than at Campuses B and C. "Clarity and fairness of policy" was found to be lower at Campus A than at Campuses B and C[8] (See Table 7).

[8]The results for "empowerment" and "clarity and fairness of policy" do not necessarily imply any contradiction. The two factors were uncorrelated at Campus A, $r = -.009$.

Time

Methodology. As an overall measure of change in climate, we wanted to test for changes in the collective perception of AHS students over time.[9] However, we wanted to isolate this change from any associated with individual students' growth, and we also had to account for the possibility that there were changes in the student population which would affect our results. Therefore, we compared the ratings of students being post-tested at May, 1989, January, 1990, and May, 1990, using their pre-test ratings of AHS to control for cohort differences by analysis of covariance. Each of the External and Internal factors was tested independently. One obvious, but apparently unavoidable, weakness of this design was that in beginning with the May, 1989 post-test, one year into the intervention, we forfeited the ability to detect changes which had occurred over the first year.

Results. When all sites were analyzed together, there were significant changes over year two in two factors (see Table 8). "Discipline" stayed fairly constant from May, 1989 to January, 1990, and then improved significantly by May, 1990. "Clarity and fairness of policy" dropped significantly from May, 1989 to January, 1990, and then rose significantly in May, 1990. The final level was higher, though not significantly so, than the first (see Figure 1).

When Campus A was analyzed alone, the only significant result was for "clarity and fairness of policy," which showed the same pattern of results as when all sites were analyzed together. There were no significant results for Campuses B or C analyzed alone (see Table 9).

Individual Changes

Methodology. The analysis of changes within subjects was carried out by a MANOVA repeated measures design. Pre-test and post-test scores were used, but

[9]This analysis was therefore at the level of aggregate perception of the school.

not the post-post-test.[10] The analysis was limited to students who had rated AHS on the pre-test.

Due to violations of statistical assumptions because of low N's, new variables were computed, using means of the variables loading above .50 on a factor, rather than factor scores.[11] Means were allowed to be computed if no more than one variable on a factor was missing, except in the case of 2-variable scales, in which case both had to be present. This strategy greatly increased the available N for the analysis. One of the new factor scales, for "academic image," was unreliable and was not included in the analysis.

Analyses were performed for all sites together and for each site individually. Both multivariate and univariate effects were assessed.

Results. Note that this analysis differs from that of changes over time. The time analysis looks at changes in collective perception from date to date, and is therefore concerned with the school as the level of analysis. The current analysis is concerned with changes in the individual student's perceptions of climate between the times of her/his pre- and post-surveys, regardless of the dates of those surveys. Thus, this is a "within subjects" analysis.

There were a number of significant changes in the individual student's perceptions of climate. There were no significant differences between campuses in the amount of change students experienced.[12]

As shown in Table 10, there was a significant multivariate effect for change in perceived climate for both the Internal and External factor sets. The change in

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[10]Inclusion of post-post-tests, while it would have been desirable to show longer-term effects of the interventions, was impossible because of unacceptably low numbers of subjects.

[11]For full statistics on factor scales computed by this method, see Appendix B.

[12]The factors that reached significance for all campuses combined came out just short of Bonferroni-corrected significance (see following footnote) at individual sites. Since the results are so close, and all in the same directions, results for all campuses together are presented here.

the Internal set was a negative one, driven by a significant decline in "liking for school and learning" (see Table 11) and a non-significant decline in "social image." The change in the External set was generally a positive one, largely corresponding to a significant increase in "promotive interdependence" (see Table 11).[13]

To recap, then, the significant results of the univariate tests of factors[14] were a significant increase in perceived "promotive interdependence," and a significant decline in "liking for school and learning" (see Table 11).

Exposure

Methodology. Each of the External and Internal factors[15] were regressed on the objective measures of Exposure to the interventions. For Campus A, this was the measure of Exposure to CR training developed by Dolezal (1991). This measure was based on reconstructions of students' schedules to determine how many hours they were exposed to training by ICCCR staff. Students who were post-post-surveyed had Exposure scores covering the entire period up to the post-post-survey. Students who were only post-surveyed were given Exposure scores for the period up until their post-survey. Thus, for this campus, post-post-tested students were likely to be older, have been at AHS longer, and have had more Exposure.

For Campuses B and C, a measure of Exposure to CL was developed (Deutsch, Mitchell, Zhang, Khattri, Tepavac, Weitzman, & Lynch, 1992). The measure is based on the percentage of classroom time a student's teachers say they spend using CL techniques, and the amount of time the student spends with each teacher. The measure covered the last three "cycles" (AHS's name for academic

[13]The multivariate effect must be interpreted with caution, however, as it was also contributed to by weak, non-significant declines in a couple of factors at individual campuses.

[14]Since multiple planned comparisons were being made, Bonferroni type adjustments were made to à levels. This resulted in an $\alpha' = \alpha/C = .05/9 = .006$ for the External set and $\alpha' = .05/6 = .008$ for the Internal set.

[15]As was the case for the analysis of Individual Changes, low N forced the use of factor scales rather than factor scores. See Appendix B.

quarters) of the intervention--essentially November, 1989 to May, 1990. Post and post-post measures from May, 1990 were used, and were treated separately. Thus, for these two Campuses, post-post-tested students were also likely to be older, have been at AHS longer, and have had more exposure, but any exposure prior to November, 1990 would not show up in the Exposure measures.

Results. For post-tested students at Campus A, which received the CR intervention, students experienced less "individual victimization," and their "liking for school and learning" and "friend's popularity" increased significantly with their Exposure to the intervention (see Table 12). Unexpectedly, they also reported that "discipline" was more of a problem the more they were exposed. For post-post-tested students at Campus A, "liking for school and learning" and "individual victimization" also tended to improve, though not significantly.

At Campuses B and C, the Exposure measure reflected students' exposure to the CL intervention. Remember that Campus B received CR in the first year and CL in the second, whereas Campus C received only CL, for two years. Also, students being post-post-tested in May, 1990, were likely to have been at AHS longer than students being post-tested at that date, even though the Exposure measure only captures the last 3 cycles.

Here, the results are somewhat complex. At Campus B, students post-post-tested in May, 1990 experienced significantly less "alienation," and found "academic support" significantly better (school work was easier and less discouraging) with more Exposure (see Table 13). There were no significant effects for students being post-tested in May, 1990.

At Campus C, for post-tested students, increases in Exposure predicted an increase of reported "group learning," improved "social image," an increase in "liking for school and learning," and a decrease in perceptions of "criminal activity" (see Table 13). There were no significant effects for post-post-tested students.

Classroom Ratings by Exposure

Methodology. The three factors[16] which resulted from the items asking students to describe the class they attended most often were also regressed on the Exposure measures. A word of caution needs to be introduced here. The class a student chose to rate might or might not have been one in which the interventions were applied. Since Exposure is an estimate of the frequency with which a student is exposed to the interventions, a higher Exposure score indicates nothing more than an increased probability that a student rated a class where the intervention was applied. The only effect we can imagine this might have on the results of the current analysis is to interfere with our being able to significantly predict classroom ratings from Exposure. We thus treat any significant results arising from this analysis with extra confidence.

Results. At Campus A, for post-post-tested students, "class liking/learning" and "class student social climate" were significantly predicted by Exposure, and "class cooperativeness" also tended to improve with Exposure, though not significantly (see Table 14). There were no effects for post-tested students. At Campus B, "class liking and learning" improved with Exposure, significantly so for post-tested students, and not significantly so for post-post-tested students. "Class cooperativeness" and "class student social climate" both improved significantly for post-post-tested students, and "class cooperativeness" showed a positive, non-significant trend for post-tested students. However, at Campus C there was no significant predictive power.[17]

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[16]Again, factor scales rather than factor scores had to be used because of insufficient N. See Appendix B.

[17]Note, though, that for post-post-tested students the á's (which in this case are equivalent to Pearson's r) are negative, with Liking and Learning representing the highest correlation.

Discussion

Positive changes over time were found in "discipline" and "clarity and fairness of policy." Individuals tended to experience more "promotive interdependence" over time, but less "liking for school and learning." Students' Exposure to the CR intervention (for post-surveyed students) at Campus A improved their "liking for school and learning," decreased their sense of "individual victimization," increased their evaluation of their best friend as popular, and heightened their sensitivity to "disciplinary" problems. In individual classrooms it also enhanced their "class liking/learning" and evaluation of the "class student social climate." A student's Exposure to the CL intervention at Campus B (for post-post-surveyed students) decreased their feeling of "alienation," improved their sense of "academic support," and in individual classrooms improved their perceptions of the "class cooperativeness" and "class student social climate, while for post-surveyed students it increased their "class liking/learning." Finally, at Campus C, a post-surveyed student's Exposure to CL improved their sense of their "social image," their "liking for school and learning," the frequency with which they reported "group learning," and decreased the extent to which they experienced "criminal activities" as a problem.

The results of the comparison between AHS and students' previous schools seems to meet the criterion set forth by James and Jones (1974) for perceptual measures to be acceptable for description of organizational climate. That is, our measures successfully discriminated between different situations: AHS on the one hand, and students' previous schools on the other.

In general, the results supported our assumption that AHS provides a substantially more favorable climate than do the traditional public high schools in New York City. Students reported better "discipline," less "criminal activity," more "empowerment," that less "victimization exists," and that their individual "academic

images" were better. They also reported that they received more "academic support" (school work was less difficult and discouraging). The major exception to this positive trend was that students felt that their "social images" were better at other schools. However, viewed together with the fact that they felt they had better "academic images" at AHS, this may not be a bad thing. The results suggest a change in priorities for students at AHS, shifting from an emphasis on "social image" to one on "academic image."

Finally, students also reported, even before our interventions began, that more "group learning" took place at AHS. This fact, together with the findings just discussed, may have made AHS a particularly difficult place to demonstrate the effects of our interventions, especially on climate. "Group learning" was already substantially more prevalent than in other schools, and the climate was already much more positive. Quite likely, there was a "ceiling" against which we were operating. The fact, then, that the various studies on this project described in the chapters of this report and elsewhere (Dolezal, 1991; Tepavac, 1991) did show meaningful results, is all the more encouraging.

The differences between campuses described in earlier chapters notwithstanding, the three campuses did not differ much in climate, as we measured it, before the interventions began. The multivariate effects were not significant, and only two climate factors showed differences: at Campus A as compared to the other two campuses, students felt more "empowered" and reported less of a sense of "clarity and fairness of policy."

In our analysis of changes over time, we found that between May, 1989 and January, 1990, the only change was a drop in "clarity and fairness of policy," and this seemed to be primarily at Campus A. From January, 1990 to May, 1990, however, this factor showed significant improvement, as did "discipline." The change in "discipline" generalized across sites, although it only reached significance when all

sites were analyzed together. (This is probably due to the fairly low N at the individual sites.) These changes cannot be directly attributed to our interventions, but are of interest only in a suggestive manner. Unfortunately, there is no way to include the first year of the intervention in a controlled analysis of changes over time, so that questions remain about both changes in the initial period of the intervention and the true magnitude of changes by the end of the second year.

The within subjects analysis had two major findings. First, as a student spent more time at AHS, s/he developed more of a sense of "promotive interdependence" with peers. The concept of "promotive interdependence" is central to Deutsch's theory of cooperation and competition (Deutsch, 1985), the model of cooperative learning built upon it (Johnson, Johnson & Holubec, 1986), and the approach of our intervention in constructive conflict resolution. The creation of such relations was one of the major aims of both interventions.

While this change could not be predicted directly from a student's own Exposure to the interventions, "class cooperativeness," which measured essentially the same constructs for a particular class, was significantly predicted by Exposure at Campus B for post-post-tested students. These are generally students who had been at Campus B of AHS throughout the project and thus were the group to experience what was expected to be the optimal combination of CR followed by CL. The same trend, though not significant, was also present for post-tested students at Campus B, and for both post- and post-post-tested students at Campus C (see Table 14).

Given these effects in the classrooms (which is where direct Exposure takes place) it may be reasonable to argue that the general increase in "promotive interdependence" experienced by students across sites, regardless of exposure, likely has some relation to the interventions, not necessarily as a result of personal exposure to the interventions, but as a result of the diffusion of the effects of the intervention throughout the campuses.

The second within subjects change is a decrease in "liking for school and learning." We have two tentative explanations for this change. First, it may be that students who first arrive at AHS have unrealistically high expectations, partly in relation to their previous schools, which are reflected in somewhat inflated liking for AHS and enthusiasm about learning. As they spend more time there, they may become somewhat disillusioned.[18] A similar explanation is that by the time of their post-tests students were simply running out of enthusiasm for high school, a phenomenon which, for any high school, would not be surprising.

Regardless of the actual reason(s) for this change, we feel confident that it does not have to do with our interventions. The overwhelmingly positive findings of the Exposure analyses, including especially the positive impact of Exposure on "liking for school and learning" at Campus C and on "class liking/learning" at Campuses A and B, make it highly unlikely that the interventions would have the effect of reducing "liking for school and learning." On the contrary, it appears that the interventions had the effect of mitigating this phenomenon.

At Campus A, CR Exposure significantly predicted more "liking for school and learning," less "individual victimization," a more popular best friend ("friend popular"), and a heightened awareness of "disciplinary" problems.[19] The last result was unexpected. Presumably, it was due to increased sensitivity, with Exposure, to problems such as violence, obedience, and respect. Note that concurrent with this effect, students also experienced less "individual victimization" and more "liking for school and learning." Viewed as a package, it would seem that while the CR intervention heightened students' awareness of "disciplinary" problems, it also

[18]Note though, that the baseline group used for the comparison between AHS and other schools were fairly veteran students. So if disillusionment was operating, even those who had been around long enough to become disillusioned saw AHS as better than other schools.

[19]For post-tested students. Results for post-post-tested students, with N's of only 8 or 9, where not significant, though a correlation of $r = .33$ for "liking for school and learning" with Exposure was found.

enabled them to reduce the extent to which they were victimized in various ways, improved their feelings about their friends on a social level, and improved their liking for the school and their enthusiasm about learning.

At Campus B, a large part of the story, as discussed above, seems to lie in whether or not students had been around long enough to have experienced both the CR and CL interventions. If they had, they experienced a benefit on the "alienation" factor and experienced more "academic support" (school work easier and less discouraging).

At Campus C, post-tested students reported significantly more "liking for school and learning," less "criminal activity," more "group learning," and better "social images" with more CL Exposure. All of these effects are in predicted directions, and the "group learning" effect is particularly nice as a manipulation check. The absence of such effects for the post-post-test group is difficult to explain. For the CL Exposure, the period of exposure measured is the same for the post- and post-post-tested groups--the last three academic quarters of year two. The most likely explanation for the lack of relationship in the post-post-tested group is that students who had less Exposure in the measured period may have had plenty of unmeasured exposure to CL over the earlier five quarters.

Finally, the three classroom rating factors were in many cases significantly predicted by Exposure at both Campuses A and B. At Campus A, as discussed earlier, "class liking/learning" and "class student social climate" were significantly predicted to improve by Exposure for post-tested students, while "class cooperativeness" for those students, and all three classroom factors for post-post-tested students showed a non-significant tendency to improve.

At Campus B, Exposure significantly improved "class liking/learning" for the post-tested group, and "class cooperativeness" and "class student social climate" for the post-post-tested group. This suggests that CL alone--which again is what the

post-tested students at Campus B generally received--does have a positive impact on students' evaluation of a class, the teacher, and their confidence in their own performance, while the combination of CR and CL--which the post-post-tested group generally received--has a positive impact on the perceived level of promotive interdependence, investment in and experience of learning, and the social and academic climate among the students in the class.

As discussed earlier, that these effects came through at all is impressive in view of the fact that we were dealing only with probabilities that students would rate the classes in which the interventions were applied. That no classroom effects were found at Campus C is unfortunate, but in light of the obstacles to the implementation of the training there discussed in Chapter V, perhaps not too surprising.

Conclusion

The examination of changes in climate in the current study was complex, and many issues made it particularly difficult both to detect effects and to trace them to our interventions. Nonetheless, beneficial effects were found, several of which could be directly related to the interventions. The overall pattern--i.e. that while large effects over time on climate were few there were significant impacts for those students who were more heavily exposed--suggests that an intervention carried out over a longer period of time could have even greater benefits than those demonstrated in the various studies in the current project. From the perspective of climate, conflict resolution and cooperative learning training in a school such as AHS seem to be worthwhile.

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Table 1

Log of Questionnaire Administration

DATE	TYPE OF MEASUREMENT	N	SCHOOL CLIMATE MEASURED
5/88	PRE	350	AHS
9/88	PRE	291	OTHER
5/89	PRE	44	OTHER
9/89	PRE	126	OTHER
1/90	PRE	15	OTHER
5/90	PRE	29	OTHER
5/89	PRE	46	AHS
1/90	PRE	46	AHS
5/90	PRE	109	AHS
5/89	POST	190	AHS
1/90	POST	64	AHS
5/90	POST	108	AHS

Table 2A

Pre-Test Dates for Post-Tested Students

Crosstab of pre-test date by post-test date for post-tested students. 17 students who took the post-test are missing all pre-test data. Numbers in parentheses represent column totals when taken without accounting for missing pre-tests. Crosstabs for students pre-tested as "entering" and "continuing" are given separately in Tables 2B and 2C.

Count	POST-TEST DATE 5/89	1/90	5/90	Row Total
PRE-TEST DATE 5/88	60	14	7	81
9/88	119	24	10	154
5/89	1	25	7	31
9/89			78	78
Column Total	180(190)*	63(64)*	102(108)*	345(362)*

Number of Missing Observations: 17

*Note: Numbers in parentheses are column totals ignoring missing values.

Table 2B

For "Continuing" Students: Those Who had Attended Alternative High for Several Months Before Taking a Pre-Test.

Count	POST-TEST DATE 5/89	1/90	5/90	Row Total
PRE-TEST DATE 5/88	60	14	7	81
5/89		9	4	13
9/89			20	20
Column Total	60	23	31	114

Table 2C

For "Entering" Students: Those Who Were New To The School When Pre-tested.

Count	POST-TEST DATE 5/89	1/90	5/90	Row Total
PRE-TEST DATE 9/88	120	24	10	154
5/89		16	3	19
9/89			58	58
Column Total	121	40	71	231

Number of Missing Observations: 17

Table 3A

Factors in the External Set

Factor	Meaning of Factor
Discipline	General disciplinary issues, such as obedience, respect, attendance and violence.
Criminal Activities	Problems more explicitly criminal in nature--such as drugs, drinking, violence, weapons and stealing--than those in the factor above.
Empowerment	Student empowerment in policy issues. Driven primarily by questions about the extent to which students participate in policy-making and have control over their work.
Clarity and Fairness of Policy	Driven primarily by questions about the extent to which rules are clearly understood, and fairly and evenly applied.
Alienation	Extent of a generalized feeling of alienation. Consisted of items about trust among students, trust between students and teachers, and whether students who get good grades are popular.
Academic Support	Comprised of items about the difficulty of school work, and whether it is frequently discouraging. An item asking whether teachers expect a lot contributed weakly to the factor as well.[20] We thought at first that higher standards would be the "positive" direction on this factor. However, this factor is significantly correlated with "liking for school and learning," a factor from the Internal set, such that as students find school work easier and less discouraging, they report more liking for AHS and more enthusiasm about learning. This suggests that the "positive" direction on this factor in the minds of the students is work being less discouragingly difficult, and teachers' expectations being more reasonable (rather than "too low" or "too high").

[20]This item loaded on the factor at .47, while we have used the criterion of a loading of .50 for consideration of items in interpreting a factor.

Table 3A
(continued)

Factor	Meaning of Factor
Group Learning	Asks whether students learn in small groups, and whether teachers help them learn how to work together in groups. This factor does not necessarily imply that the group work is cooperative.
Promotive Interdependence	Asks more specifically about whether the relationship in small work groups is promotively interdependent: i.e. cooperative. Contains items about whether students have to help each other to get a good grade and whether others feel let down if you fail.
Victimization Exists	Driven primarily by items about the extent to which victimization exists in the school in general, and less so by items about whether the student in particular had been victimized. Included were questions about the frequency with which students brought weapons to school, damaged school property, and offended each other with racial or ethnic slurs.

Table 3B

Factors in the Internal Set

Factor	Meaning of Factor
Social Image	Students answered a number of items rating how they believed other students viewed them. The first factor to come out of these questions concentrated on items about social standing, particularly: popularity, social activity, importance, leadership, and athleticism.
Academic Image	The second factor to emerge from the ratings of how students think they are perceived by their peers was composed primarily of the extent to which students thought they were seen as good students or trouble makers.
Liking for School and Learning	This factor emerged from the same set of general questions about the school as the External factors "alienation" and "academic support." It was comprised of questions about excitement about learning, the importance of doing well, and liking for school.
Individual Victimization	This factor was described in the introduction to this section. It was driven by items asking about the frequency with which the student was victimized in various ways, including theft, vandalism, name calling, and unwanted sexual attention.
Friend Academics	Students were asked to rate their closest friend on a number of attributes. One factor emerging from the ratings was driven by academic issues such as grades, college plans, and attendance
Friend Popular	The second factor from ratings of best friends was composed almost exclusively of the friend's popularity.
School Supportive	Students rated the degree to which the school was supportive or upsetting to them. This was a single questionnaire item.

Table 3C

Factors in the Classroom Ratings Set

Factor	Meaning of Factor
Class Liking/Learning	This factor represented the degree to which students liked the class and the teacher, and their enthusiasm for learning in the class. It was driven by items asking how much the student liked the class, felt confident s/he would do well, thought the teacher cared and was a good teacher, and thought students learned in the class.
Class Cooperativeness	The classroom ratings included a number of items which correspond to essential characteristics of cooperative versus competitive social relations (see Deutsch, 1985). Several of these clustered together in the factor analysis, creating a factor which seems to indicate the degree to which the classroom climate was cooperative or competitive in nature. The items included whether students felt they had to win out over others in order to do well, whether working with others was a waste of time, how easy or hard it was to find students willing to help them, whether students were likely to put each other down, whether they felt nervous in the class, whether they cared about learning in the class, and whether they did learn in the class.
Class Student Social Climate	This factor represented the general tenor of social relations among students in the class. It was driven by items asking about such things as whether the student had good friends in the class, and felt that others cared about his/her feelings, or really listened to one another.

Table 4

Multivariate Tests of Differences Between Alternative High and Students' Previous Schools

	N					
	Alternative High	Previous School	Wilks Lambda	F	DF	Sig.
External	209	197	.32	92.88	9, 392	.000[21]
Internal Interaction	212	185	.90	2.98	14, 770	.000

[21]Alternative High School is rated 2.94 standard deviations higher on the canonical variate (the linear combination of factors that is tested in MANOVA) than previous schools.

Table 5

Univariate Tests of Differences Between Alternative High and Students' Previous Schools: External Factors

Factor / Campus	Alternative High N	Alternative High Mean	Previous School N	Previous School Mean	t	Sig.
Discipline						
HI=Better discipline						
All Campuses	209	.139	197	-.766	10.48	.000
Campus A	74	.074	74	-.863	6.74	.000
Campus B	65	.272	43	-.678	5.72	.000
Campus C	70	.083	80	-.724	5.84	.000
Criminal Activity						
HI=Less criminal activity						
All Campuses	209	.152	197	-.295	4.28	.000
Campus A	74	.202	74	-.462	3.82	.000
Campus B	65	.139	43	-.357	2.38	.018
Campus C	70	.110	80	-.108	1.26	.210
Empowerment						
HI=More empowerment						
All Campuses	209	.513	197	-1.130	25.35	.000
Campus A	74	.750	74	-1.296	19.94	.000
Campus B	65	.300	43	-.906	9.83	.000
Campus C	70	.460	80	-1.097	15.25	.000
Academic Support						
HI=Easier, less discouraging						
All Campuses	209	.111	197	-.279	4.14	.000
Campus A	74	.090	74	-.338	2.75	.006
Campus B	65	.212	43	-.297	2.73	.007
Campus C	70	.040	80	-.214	1.64	.102
Group Learning						
HI=More group learning						
All Campuses	209	.237	197	-.660	9.37	.000
Campus A	74	.300	74	-.616	6.00	.000
Campus B	65	.292	43	-.574	4.74	.000
Campus C	70	.120	80	-.746	5.69	.000
Victimization Exists						
HI=Less victimization						
All Campuses	209	.204	197	-.740	9.35	.000
Campus A	74	.368	74	-.963	8.68	.000
Campus B	65	.198	43	-.334	2.90	.004
Campus C	70	.036	80	-.751	5.16	.000

Table 6

Univariate Tests of Differences Between Alternative High and Students' Previous Schools: Internal Factors

Factor / Campus	Alternative High N	Alternative High Mean	Previous School N	Previous School Mean	t	Sig.
Academic Image						
HI=More positive						
All Campuses	212	.222	185	-.304	4.73	.000
Campus A	72	.277	77	-.304	3.54	.000
Campus B	70	.021	36	-.103	.60	.546
Campus C	70	.366	72	-.403	4.58	.000
Social Image						
HI=More positive						
All Campuses	212	-.101	185	.226	-3.69	.000
Campus A	72	-.053	77	.121	-1.07	.287
Campus B	70	-.120	36	.543	-3.24	.001
Campus C	70	-.132	72	.179	-1.86	.064
Individual Victimization						
HI=Individual less victimized						
All Campuses	212	.045	185	.159	-.50	.616
Campus A	72	.040	77	.198	-1.19	.234
Campus B	70	.233	36	-.267	3.02	.003
Campus C	70	-.138	72	.330	-3.46	.001

Table 7

Differences Among Campuses: Oneway ANOVA's

	Campus A		Campus B		Campus C				
Factor	N	Mean	N	Mean	N	Mean	DF	F	Sig.
Empowerment HI=More empowerment	74	.750	65	.300	70	.460	2,206	9.82	.000
Clarity/ Fairness HI=More clarity	74	-.287	65	.220	70	.076	2,206	5.93	.003

Differences Among Campuses: Contrasts

	Campus Contrasts			
	B vs. C		A vs. Average(B+C)	
Factor	t	Sig.	t	Sig.
Empowerment HI=More empowerment	1.52	.129	4.19	.000
Clarity/Fairness HI=More clarity	-.93	.354	-3.34	.001

Table 8

Changes Over Time: All Campuses Together

Factor	Sum of Squares	DF	Mean Square	F	Sig. of F.
Discipline HI=Better discipline	3.49	2	1.75	3.48	.035
Clarity/Fairness HI=More clarity	5.75	2	2.87	4.42	.015

Table 9

Changes Over Time at Campus A

Factor	5/89	1/90	5/90	Sig.
Clarity/Fairness	HI(.139)	LO(-.844)	HI(.344)	.026

HI=More clarity

Table 10

Multivariate Tests of Within-Subjects Changes

Factor Set	N	Wilks Lamda	Exact F	DF	Sig.
External	94	.81	2.23	9, 83	.028
Internal	90	.83	2.80	6, 82	.016

Table 11

Univariate Tests of Within-Subjects Changes

Factor	Mean		t	Sig.
	Pre	Post		
EXTERNAL				
Promotive Interdependence	-.129	.184	3.04	.003
INTERNAL				
Liking of School, Learning	.107	-.140	2.75	.007

Table 12

Factors Regressed on Conflict Resolution Exposure Measure for Campus A: Post- and Post-Post-Surveys

	POST					POST-POST				
Factor	N	β	R^2	F	Sig.	N	β	R^2	F	Sig.
Discipline HI=Better discipline	54	-.29	.08	4.72	.034	8	.03	.00	.01	.937
Liking/ Learning HI=More liking, learning	54	.25	.06	3.52	.066	9	.33	.11	.87	.381
Individ. Victimization HI=Individual less victimized	54	.24	.06	3.21	.079	9	.20	.04	.29	.608
Friend Popular HI=More popular	54	.24	.06	3.08	.085	8	Correlation could not be computed: no variance on DV			

Table 13

Factors Regressed on Cooperative Learning Exposure Measure for Campuses B and C: May, 1990 Post- and Post-Post-Surveys

	5/90 POST					5/90 POST-POST				
Factor	N	β	R^2	F	Sig.	N	β	R^2	F	Sig.
CAMPUS B										
Alienation HI=Less Alienated	32	.14	.02	.58	.454	**31**	**.60**	**.36**	**16.22**	**.000**
Academic Support HI=Easier, less discouraging	33	.28	.08	2.62	.115	**28**	**.43**	**.43**	**5.85**	**.023**
CAMPUS C										
Criminal Activity HI=Less criminal activity	**31**	**.31**	**.10**	**3.15**	**.087**	41	-.04	.00	.05	.825
Group Learning HI=More group learning	**31**	**.30**	**.09**	**2.92**	**.098**	42	-.21	.04	1.79	.189
Social Image HI=More positive	**31**	**.39**	**.15**	**5.26**	**.029**	42	-.03	.00	.05	.830
Liking/ Learning HI=More liking, learning	**31**	**.34**	**.11**	**3.75**	**.063**	42	-.08	.01	.27	.604

Table 14

Classroom Ratings Regressed on Conflict Resolution Exposure at Campus A. on Cooperative Learning at Campuses B and C

	5/90 POST					5/90 POST-POST				
Factor	N	β	R^2	F	Sig.	N	β	R^2	F	Sig.
CAMPUS A										
Class Liking/ Learning HI=More liking, learning	**53**	**.25**	**.06**	**3.38**	**.072**	8	.11	.01	.07	.800
Cooperative HI=More cooperative	54	.18	.03	1.68	.201	9	.34	.12	.93	.366
Student Social Climate HI=More positive	**54**	**.23**	**.05**	**3.00**	**.089**	9	.20	.04	.30	.599
CAMPUS B										
Class Liking/ Learning HI=More liking, learning	**32**	**.31**	**.10**	**3.15**	**.086**	28	.28	.08	2.12	.157
Cooperative HI=More cooperative	33	.23	.05	1.72	.198	**29**	**.61**	**.37**	**15.84**	**.001**
Student Social Climate HI=More positive	33	.09	.01	.23	.635	**29**	**.50**	**.24**	**8.76**	**.006**
CAMPUS C										
Class Liking/ Learning HI=More liking, learning	30	.19	.04	1.05	.314	41	-.25	.06	2.66	.111
Cooperative HI=More cooperative	30	.02	.00	.01	.917	41	-.10	.01	.43	.516
Student Social Climate HI=More positive	30	.01	.00	.00	.948	41	-.21	.05	1.84	.183

Figure 1

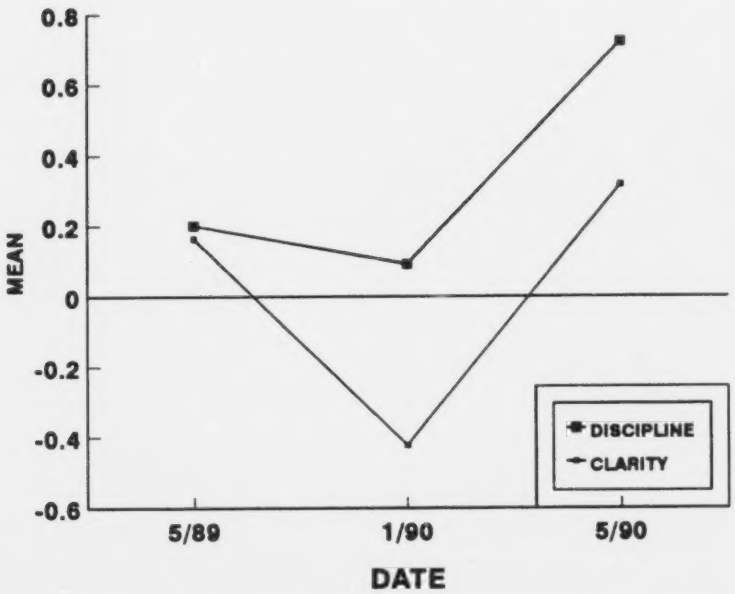

Figure 1. Changes over time as perceived by students post-tested at each date. All sites together.

Appendix A

Principal Components Analyses of Climate Measures

The data on social climate came from numerous scales in the questionnaire. Each of these scales was reduced by principal components analysis, using SPSS V. 4.1 (1991). Varimax rotation was then performed, and factor scores were computer-generated. Tables A-1 through A-8 present the varimax rotated principal components loadings for all factors in this study. Variables loading above .50 on a factor were taken into account in interpreting the factor. Loadings above .50 appear underscored, and in boldface type in the following tables.

Table A-1

Varimax-Rotated Principal Components Loadings on External Factors: "Discipline" and "Criminal Activity"

Variable	Discipline [External]	Criminal Activity [External]
How much of a problem are the following disciplinary situations at AHS? (HI=Not a problem)		
Students refusing to obey school policy	**.82**	.36
Disrespect for teachers or staff	**.80**	.35
Disrespect for other students	**.78**	.34
Students coming late to class	**.78**	.12
Cutting classes	**.75**	.32
Drugs used on campus	.16	**.87**
Drinking liquor, beer, wine on campus	.25	**.85**
Weapons on campus	.46	**.77**
Stealing	.35	**.73**
Violence, student fighting or vandalism	**.57**	**.62**

Table A-2

Varimax-Rotated Principal Components Loadings on External Factors: "Empowerment" and "Clarity/Fairness of Policy"

Variable	Empowerment [External]	Clarity/ Fairness of Policy [External]
How often are the following things true about AHS? (HI=Always)		
Students have a say in making school policy	**.89**	.12
Students are treated like adults	**.81**	.26
Students can work at their own pace	**.80**	.17
Students can change unfair rules and decisions	**.80**	.2
Students help decide how courses will be taught	**.77**	.06
Students know what will happen if they break school rules	.07	**.81**
Punishments for breaking school policy is the same for all students	.13	**.76**
Everyone knows what school policy is	.13	**.72**
School policy is fair	**.50**	**.53**

Table A-3

Varimax-Rotated Principal Components Loadings on Internal Factors: "Social Image" and "Academic Image"

Variable	Social Image [Internal]	Academic Image [Internal]
How do other students at AHS see you? (HI=Very)		
As popular	**.80**	-.09
As socially active	**.77**	.13
As important	**.75**	.23
As part of the leading crowd	**.73**	-.22
As athletic	**.62**	-.03
As a good student	.31	**.76**
As a troublemaker	.33	**-.75**

Table A-4

Varimax-Rotated Principal Components Loadings on Internal Factor: "Liking for School and Learning" and External Factors: "Alienation" and "Academic Support"

Variable	Liking for School and Learning [Internal]	Alienation [External]	Academic Support [External]
How strongly do you agree or disagree?			
I feel excited about learning	**.80**	-.01	.12
It's important for me to do well in my school work	**.78**	-.05	.15
I like school	**.71**	-.10	.10
Students are friendly at AHS no matter what your ethnic background is	.48	-.37	-.21
There is a teacher or other adult that I can talk about my problems with at AHS	.46	-.19	-.06

Continued next page...

Table A-4
(continued)

Variable	Liking for School and Learning [Internal]	Alienation [External]	Academic Support [External]
How strongly do you agree or disagree?			
Students don't trust each other at AHS	-.05	**.72**	.00
Teachers don't trust students at AHS	-.17	**.68**	-.20
Students don't trust teachers and staff at AHS	-.16	**.65**	-.16
Students who get good grades are not popular at AHS	.00	**.64**	-.22
Students at AHS are proud of their school	.39	-.43	-.40
I have trouble making friends at school	-.18	.41	-.37
School work is usually hard for me	-.15	.11	**-.74**
I get discouraged with school work	-.27	.22	**-.66**
Teachers expect a lot from students at AHS	.19	.12	-.48

Table A-5
(continued)

Variable	Class Liking/ Learning [Classroom Rating]	Class Cooperative [Classroom Rating]	Class Student Social Climate [Classroom Rating]
Think about one class. How strongly do you agree or disagree?			
I don't care if I learn anything in this class	-.42	**-.70**	.05
I am nervous when I am in this class	-.17	**-.63**	.19
I don't learn anything in this class	**-.53**	**-.63**	.10
To do well, I have to win out against my classmates	.18	**-.62**	-.23
Working with a group of students on a project is usually a waste of my time	-.13	**-.62**	-.36
If I need help in this class, it's usually hard to find students who are willing to help me	-.10	**-.58**	-.43
In this class, students are more likely to "put down" each other than to encourage or praise each other	-.10	**-.51**	-.47
Other students in this class care about my feelings	.19	.06	**.73**
In this class, students really listen to one another	.45	.11	**.61**
I have good friends in this class	.21	.03	**.60**

Table A-6

Varimax-Rotated Principal Components Loadings on External Factors: "Group Learning" and "Promotive Interdependence"

Variable	Group Learning [External]	Promotive Inter-dependence [External]
Think about all your classes at AHS. How often are the following things true? (HI=Very Often)		
I have had classes at AHS where the teacher has the students learn things together in groups	**.92**	.13
I have been in classes where the teacher helps students learn how to work in small groups	**.92**	.13
I have been in classes where other students feel let down if you don't do your best work	-.02	**.88**
I have been in classes where students have to help each other in order to get a good grade	.32	**.71**

Table A-7

Varimax-Rotated Principal Components Loadings on External Factor: "Victimization Exists" and Internal Factor: "Individual Victimization"

Variable	Individual Victimization [Internal]	Victimization Exists [External]
How often have the following things happened in the last three months? (HI=Never)		
Someone forced me to hand over money or things (books, bus passes, jewelry) at school	**.83**	-.01
I was physically attacked in school	**.74**	.17
I have been pressured or threatened to have sex with someone I did not want to have sex with	**.74**	.09
I received sexual attention from school or security staff that offended me	**.74**	.09
I was afraid that someone would physically hurt me at school	**.74**	.22
Things have been stolen from my locker, lunch table, desk at school	**.69**	.26
I was offended by name calling or swearing	**.66**	.26
I have had things damaged by someone wanting to "get back at me"	**.64**	.34
I was insulted or threatened with words	**.56**	.31
Students bring weapons to school to protect themselves	.05	**.82**
Students are put down by name calling that refers to their racial or ethnic background	.23	**.78**
Students at AHS deliberately damage school property	.23	**.77**

Table A-8

Varimax-Rotated Principal Components Loadings on Internal Factors: "Friend Academics" and "Friend Popular"

Variable	Friend Academics [Internal]	Friend Popular [Internal]
Think of the student you are most friendly with at AHS. As far as you know, are the following true or false for him or her?		
Gets good grades	**.76**	.01
Is interested in school	**.72**	.09
Attends class regularly	**.69**	.10
Plans to go to college	**.59**	-.08
Is popular with others	.04	**.99**

Appendix B

Derivation of Scale Scores

For several of the analyses, there was insufficient N when using the factor scores described in Appendix A. This is because for a factor score to be generated, all the variables in that analysis had to be present. By using, instead, the mean of the items loading above .50 on a factor, and allowing the mean to be computed if all but one of those variables were present (but at least two), we were able to greatly increase the available N. Tables B-1 to B-3 present scale reliabilities (Cronbach's α) for all the scales in the study, along with the minimum α if any one item is missing. One scale, "academic image," (see Table B-2) was considered unreliable and was not used.

Table B-1

Scale Reliabilities for External Factor Scales

Scale	Variables*	Cronbach's α	Minimum α With 1 Item Deleted
Discipline	Refusal to obey policy Disrespect for teachers Disrespect for students Lateness Cutting Class Violence	.91	.88
Criminal Activity	Drugs Drinking Weapons Stealing Violence	.90	.87
Empowerment	Have a say in policy Treated like adults Can work at own pace Can change unfair rules Help decide how courses taught Policy is fair	.88	.84
Clarity/ Fairness of Policy	Know what happens if break rules Punish all students the same All know school policy Policy is Fair	.72	.62
Alienation	Students don't trust each other Teachers don't trust students Students don't trust teachers Students who get good grades are not popular	.70	.60
Academic Support	School work is usually hard Get discouraged with school work	.58	N/A
Group Learning	Learn in small groups Teacher helps learn how to work in groups	.86	N/A
Promotive Interde-pendence	Others feel let down if you fail Students have to help each other to get good grade	.49	N/A
Victimiz-ation Exists	Students bring weapons Racial or ethnic put-downs Students damage school property	.76	.66

*See tables in Appendix A for full questions and scoring directions.

Table B-2

Scale Reliabilities for Internal Factor Scales

Scale	Variables	Cronbach's α	Minimum α With 1 Item Deleted
Social Image	See you popular See you socially active See you important See you part of leading crowd See you athletic	.79	.72
Academic Image	See you good student See you troublemaker	.30	N/A
Liking for School and Learning	Feel excited about learning I like school Important I do well in school	.74	.61
Individual Victimiz-ation	Mugged for jewelry Physically attacked Pressured to have sex Received sexual attention Afraid someone would hurt me Things stolen from locker Offended by name calling Had things damaged by revenge Was insulted	.89	.88
Friend Academics	Friend gets good grades Friend interested in school Friend attends class regularly Friend plans to go to college	.64	.52

Table B-3

Scale Reliabilities for Classroom Rating Factor Scales

Scale	Variables	Cronbach's α	Minimum α With 1 Item Deleted
Class Liking/ Learning	Like this class Feel confident will do well Teacher cares about me Teacher is good Deserve grades I get Don't learn in this class	.83	.77
Class Cooperative	Don't care if learn Nervous in this class Don't learn in this class To do well must win out Working with others is a waste of time Hard to find students willing to help Students likely to put each other down	.78	.73
Class Student Social Climate	Others care about my feelings Students really listen to each other Have good friends in this class	.63	.46